BLM NEWS

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Research Describes Effects of Wildfire and Military Training in the Snake River Birds of Prey National Conservation Area

A multi-year research study has been completed that provides the most comprehensive assessment ever made about the health of the Snake River Birds of Prey National Conservation Area (NCA).

The NCA encompasses 485,000 acres along an 81-mile stretch of the Snake River Canyon south of Boise. It supports the highest known density of nesting raptors in North America, as well as a large number of wintering and migrating raptors. Congress designated the NCA in 1993 to conserve and protect the area's birds of prey.

The study was funded jointly by the Bureau of Land Management and the Idaho Army National Guard to address concerns raised in the late 1980's about the potential combined effects on birds of prey from military training, which has occurred in a portion of the area since the 1940s, and recent dramatic increases in the size and frequency of wildfires.

The research began in 1990 and was conducted by the Snake River Field Station of the U.S. Geological Survey's Biological Resources Division and several collaborators, including Boise State University. Scientists and technicians from five universities participated in the research. Thousands of hours of field observation and data collection were involved.

Overall, the research found that the natural condition of the NCA has deteriorated significantly since 1979.

John Sullivan, National Conservation Area manager, said the research detected changes in the native vegetation of the NCA, an increase in the frequency of wildfire, greater fluctuations in ground squirrel populations, and a reduced abundance of jackrabbits. These changes are associated with declines in populations of golden eagles and prairie falcons, two raptor species for which the NCA is particularly well known.

"The research affirms our long-held concerns. The complex balance of nature in the NCA is shifting. The research tells us that we must restore native shrubs and perennial grasses to avert long-term declines in important wildlife populations," said Sullivan.

Sullivan said increased wildfire has been an important trigger of environmental change in the NCA, but the research also found that military training can contribute to habitat changes and influence the behavior of some raptor species.

“The research also has some good news,” said Sullivan. “Four species of birds of prey are essentially unaffected by wildfire and military training. Northern harriers, burrowing owls, shorteared owls, and ferruginous hawks are doing really well in the grasslands.”

Sullivan said the research findings will be used immediately to guide and improve management of the area. In particular, land managers will focus their efforts on fire suppression and habitat restoration.

General Jack Kane, Adjutant General of the Idaho Army National Guard, said the findings also will be used to develop and evaluate proposals to improve military training within the NCA. Kane said, “The research will help the Guard manage military training so it minimizes environmental impacts. However, the research shows that restoring native shrubs on burned lands is what the NCA needs most. The National Guard will continue to be an active partner with the BLM in restoring native vegetation and managing wildfire."

(Fact Sheet of Key Research Findings follows on pages 3 and 4.)

Key Findings of the Research Project on the Effects of Military Training and Fire in the Snake River Birds of Prey National Conservation Area

Habitat

- The most important environmental change in the NCA is the extensive loss of native shrub lands due to wildfire, and the corresponding increase in the amount of exotic annual grasslands.
- Because annual grasslands are highly flammable, larger fires are more frequent than they were historically, and shrub lands are recovering far more slowly than the rate at which they are lost.
- Over 50 percent of the shrubland in the NCA has burned since 1979. Computer simulations project the complete loss of shrublands within 25 to 50 years without fire suppression. Simulations project that, under the best of environmental conditions, it will require up to 80 years to recover from the vegetation changes that occurred in the 15 years between 1979 and 1994, if recovery is possible at all.

Prey

- Townsend's ground squirrels and black-tailed jackrabbits are very important prey species in the NCA.
- Townsend's ground squirrels are most abundant and productive in perennial grassland habitats. However, shrub habitat becomes critical during drought, when more ground squirrels survive and more females produce more young in shrublands than in grasslands.
- The reduction of shrub cover and the dominance of exotic plants are likely causing greater fluctuations in Townsend's ground squirrel numbers in the NCA.
- Black-tailed jackrabbits occur mostly in large shrub patches. Because habitats are largely changing from shrub to grasslands, jackrabbit densities across the NCA will be lower.
- Habitats are declining for certain songbirds, such as sage sparrows, that rely on the historical mix of shrub and grasslands.

Raptors

- Raptors are most common in the northwestern portion of the NCA, where they forage over large areas of native shrubland, and least common in the southeast end, where exotic annual grasslands and disturbed habitats are prevalent.
- Four raptor species that nest on the benchlands (northern harriers, burrowing owls, short-eared owls, and ferruginous hawks) are relatively resilient to habitat changes. Neither fire nor military training affected these species adversely.
- The number of nesting golden eagles in the NCA has declined significantly since 1991. Golden eagles prey primarily on jackrabbits. Widespread wildfires that reduce shrub habitat and the abundance of jackrabbits could have long-term adverse effects on eagles.
- Prairie falcon numbers have declined at the eastern end of the NCA, where habitat has been fragmented by agriculture and pre-1980 wildfires. Prairie falcon populations are closely linked to Townsend's ground squirrels, their primary prey species. Fire can result in large expanses of exotic grassland, where ground squirrel populations are more vulnerable to local extinction. If fire size and frequency continue to increase, prey and prairie falcons will be affected adversely over the long term.

Effects of Military Training Activity

◊ On vegetation:

- Military training exercises using tracked vehicles caused ground disturbances associated with increased dominance by exotic annual vegetation at the local scale and with a fragmented landscape consisting of small, closely spaced shrub patches.
- Continued tracking at historical levels likely would continue to disturb soils and vegetation and reduce the potential for future vegetation recovery.

◊ On prey:

- Experimental tracking by military vehicles did not have short term effects on ground squirrel behavior, density, or survival. However, the effects of tracking activity on vegetation can affect prey over the long term because tracking can disturb soils, which increases exotic annuals in shrublands. Exotic annuals are unstable food sources for ground squirrels and promote the spread of future fires. Also, the fragmentation of large sagebrush patches by tracking lowers the habitat quality for black-tailed jackrabbits.

◊ On raptors:

- Four raptor species that nest on benchlands (northern harriers, burrowing owls, short-eared owls, and ferruginous hawks) are resilient to disturbances from military activity.
- Military training altered the foraging behavior of prairie falcons and other raptors when intensive training occurred during the breeding season. Raptors are more likely to use training ranges on days with no training activity, and they tend to avoid those ranges when tanks are firing ammunition.
- Prairie falcons nesting south of the OTA obtained fewer ground squirrels, and had lower and more variable reproductive rates than falcons nesting west of the military training area. Also, falcons nesting near the OTA delivered fewer prey to their nests during military training activities. These effects were most pronounced when prey populations were low. Therefore, high levels of military training in years with low prey availability could affect prairie falcon reproduction south of the OTA. Because that area contains about one third of the NCA's prairie falcon nesting pairs, total productivity of the NCA could be affected.